



System Client

V4.55

User Manual

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Introduction

SyAM Software provides a comprehensive, simple to use set of system management products for servers, desktops, notebooks and tablets. Each product has features specific to their relevant system's capabilities and functions, as well as a large number of common features. Their user interfaces are identical.

The products enable several IT benefits. Among them are predictive alerting to pending failures, system configuration, unattended monitoring and alerting, remote management, and reporting. The products dynamically discover the hardware and software operating environment, and manage all physical environmental sensors available and operating system resources. Users can view them and be alerted if they exceed their thresholds.

There are two levels of system management. System Client software provides a single system view. System Area Manager provides a unified view of all of your systems, and also provides more comprehensive features.

The System Client management products are:

- Server System Client

- Desktop System Client

- Notebook System Client

- Tablet System Client

The Central Management product is:

- System Area Manager

This user manual describes the System Client software. The following sections will describe the product functionality of the System Client, and highlight areas of additional functionality available through the System Area Manager.

SyAM Software Modules

System Client software contains four products:

- **Server System Client** - Used for server platforms running server operating systems and RAID storage.
- **Desktop System Client** - Used for desktop/workstation platforms.
- **Notebook and Tablet System Clients** - Used for notebook or tablet computers that are on and off the network and may have hardware or software changes made while offsite.

These products can be installed on any Intel architecture x86/x64 platform running one of the supported operating systems.

Compatibility

<i>Operating System</i>	<i>Server System Client</i>	<i>Desktop System Client</i>	<i>Notebook System Client</i>	<i>Tablet System Client</i>
<i>Windows 2012 Server</i>	■			
<i>Windows 2008R2 Server</i>	■			
<i>Windows 2008 Server</i>	■			
<i>Windows 2003 Server</i>	■			
<i>Windows 8</i>	■	■	■	■
<i>Windows 7 Enterprise / Professional</i>	■	■	■	
<i>Windows XP Professional</i>	■	■	■	
<i>Red Hat Enterprise Server 4, 5</i>	■			
<i>Red Hat Workstation</i>	■	■	■	
<i>SuSE Enterprise Server</i>	■			
<i>SuSE Professional</i>	■	■	■	
<i>Fedora Core</i>	■	■	■	

Linux x64 Operating System Requirements

If you are running Red Hat or Fedora Core x64 Linux distribution, you must load the Compatibility Arch Support (Multi lib Support Packages). To check if this is loaded look in System Settings - Add/Remove Applications and scroll to the bottom to verify that this package is installed. If not, please install it.

System Requirements

- 160MB Disk space
- 256MB Memory

Browser Requirements

- Internet Explorer 7, 8, 9
- Mozilla Firefox

Deployment Options

During installation you are presented two options of deployment;

- Local – This installs the SyAM web server and management agent, which enables you to manage the system directly via a web browser. You may also manage the system via the system running the System Area Manager software.
- Agent – This does not install the SyAM web server; it installs the management agent only. In this case the system is only going to be managed via the system running the System Area Manager software.

Administrators use Internet Explorer or Firefox to browse to the System Client interface of the system being managed



Server running Server
System Client



Desktop running
Desktop System Client



Notebook running
Notebook System Client

Agents send event notification messages to administrators via email

Figure 1: Individual systems being managed via the SyAM Local Interface

Administrators use Internet Explorer or Firefox to browse to the System Area Manager interface to manage all systems



Agents send event notification messages to administrators via email, SMS/Pager, Local Alert, SNMP trap, System Event Log or event to the System Area Manager

Figure 2: Multiple systems being managed by System Area Manager

Chapter 1: Installation and Configuration

This chapter provides step-by-step installation and configuration instructions for System Client software on Windows and Linux Operating System Platforms.

It is recommended that you print off the quick start guide before installing the software. This simple document will step you through installation and email configuration in a few minutes.

Installation Instructions – Windows

1. Load the SyAM Software CD and from the menu choose the product version you wish to install, or double click the downloaded SyAM executable. Then just follow the Install Wizard instructions.
2. Choose the language of the user interface.
3. Choose the destination folder. This cannot contain any spaces in the name.
4. Choose either the Local or Agent installation. (default=Local)
5. To enable security through 128-bit data encryption from SyAM Server Web Server to the browser, choose the SSL option. (default=No)
6. **After the installation has finished, the SyAM services will start and dynamically discover and configure your system's monitoring environment.**

Installation Instructions – Linux

1. Download the required product version or copy it from the SyAM Software CD to the Linux system.
2. Extract the files and change permission to execute the files
3. Enter ./install – then follow the on screen instructions
4. Choose the language of the user interface.
5. Choose the destination folder (This cannot contain any spaces in the name)
6. Choose either the Local or Agent installation. (default=Local)
7. To enable security through 128-bit data encryption from SyAM Server Web Server to the browser, choose the SSL option. (default=No)
8. **After the installation has finished, the SyAM services will start and dynamically discover and configure your system's monitoring environment.**

Firewall Security

The following ports must be opened if you are using a firewall on your Linux system. They are automatically opened on Windows systems.

- 3894 – Used for agent management service
- 3930 – Used for web server if installed
- 5800 – Used for Remote Console access from System Area Manager
- 5900 – Used for Remote Console access from System Area Manager

Uninstalling SyAM System Client (Windows)

To remove System Client from the Windows system:

1. On the start menu, select Settings - Control Panel - Add/Remove Programs or Programs and Features.
2. Highlight SyAM System Client and select Uninstall. You will be prompted to confirm this action.
3. Following removal, if SyAM System Client is to be reinstalled, a system restart is required.

Uninstalling SyAM System Client (Linux)

To remove the SyAM software from the Linux system:

1. Go to the top-level directory where the SyAM software was installed.
2. `./uninstall`

The software will be uninstalled.

Chapter 2: Logging In

This chapter provides details on logging into the SyAM User Interface.

Browsing to the SyAM Web Server

Open a supported web browser with access to a system where SyAM System Client is installed with local web interface. In the URL bar, enter:

<http://IPADDRESS:3930> or <http://MACHINENAME:3930>

Example <http://192.168.1.19:3930>

Example <http://FILESERVER1:3930/>

If you enabled SSL during installation, you are required to type “https” instead of “http”:

Example: <https://IPADDRESS:3930> or <https://MACHINENAME:3930>

This will bring you to the login screen.

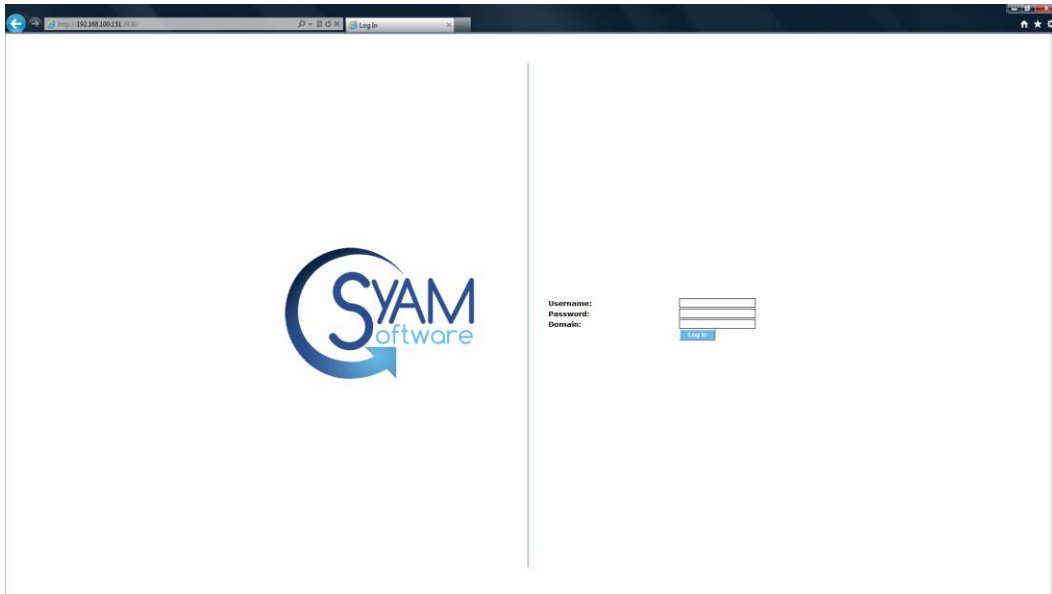


Figure 3: SyAM System Client Login Screen

The SyAM web server does not maintain its own separate set of users and passwords. It requests the operating system to log you in, so uses the accounts that are already in place on your system. To login you must satisfy the following conditions:

For Standalone systems (not in a Windows Domain)

- The User name and Password must be valid on the system you are logging into.
- The User must have Administrator rights on the system.

For systems within a Windows Domain

- The User name and Password must be valid in the Domain.
- The User must have "Domain Admin" rights within the Windows Domain
- A Valid Domain Name for the system must be entered in the Domain field.

For Linux systems

- The Username and Password must be valid on the system you are logging into.

Ending the Session

When you have completed your management session, choose the Log Out button on the main header bar. Successful logout returns you to the login screen.



Figure 4: Successful Logout

For added security you will be logged out automatically after 30 minutes of inactivity. A message box will appear on screen if you are using Internet Explorer to let you know that you need to log back in. If you are using a Firefox browser you will be logged out and returned to the login screen.

Chapter 3: The SyAM User Interface

This chapter describes how to use the System Client software. It also points out some advanced features that are available in the System Area Manager products.

The SyAM User Interface

System Client software provides administrators with the ability to view the system's current configuration and the status of the monitored sensors and resources. Additionally, the administrator can configure email notification settings.

Interface Layout

The structure of the interfaces is common whether you are viewing a Server/Desktop/Notebook System Client. The system being monitored is represented in the tree on the left hand side and the detailed information being accessed is presented on the main right hand side. Because System Client management software provides a single system view, there is only a single system in the tree. System Area Manager software displays many systems in the tree.

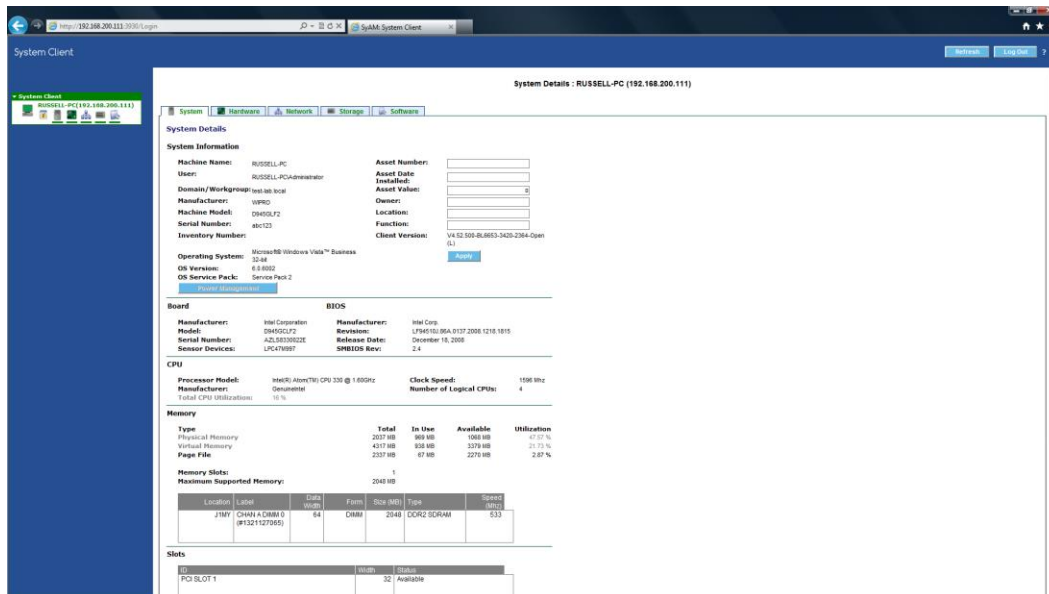


Figure 5: System Client User Interface Layout

Header Bar









The header bar has function buttons for Refresh and Log Out, and a question-mark icon for Online Help.



Figure 6: Header Bar

Health Colors

In order to quickly identify and correct system problems, SyAM System Client uses a consistent color scheme to represent the health and functionality of systems and their components. These colors can be seen in every level of monitoring, from the instance of the component to the component category and section. The health of each monitored system is updated on a regular interval. Any change in the status of the system will cause a change in the health color. The health color will remain in the changed state until the issue is resolved.

	<i>Green = Fully Functional</i>
	<i>Amber = Warning</i>
	<i>Red = Critical</i>
	<i>Grey = System state pending, currently unknown</i>
	<i>Purple = System is no longer responding</i>
	<i>Blue = Agent service has been manually shutdown</i>
	<i>Black = System has been shut down</i>
	<i>Brown = System power state has been suspended</i>

Icons

There are four icons that represent the type of SyAM software running on the managed system.



Server System Client/System Area Manager



Desktop System Client/System Area Manager



Notebook System Client









Tablet System Client

Management Tree



Figure 7: Tree Expanded to Display Monitored Sections

Tree Icons

	System Alert Matrix – Provides access to the thresholds, sample and reset periods, and notification options for all of the monitored hardware and software sensors within the system
	System – Provides system board, memory, CPU, slot, display, port information and status of the CPU and Memory utilization being monitored, in addition memory error information is displayed.
	Hardware – Provides sensor information and current status on physical sensors being monitored within the system
	Network – Provides network adapter configuration information and performance for all configured adapters within the system
	Storage – Provides physical storage device, storage controller, logical device information and health status for the storage devices and managed RAID controllers.
	Software – Provides information on OS services, processes, and installed applications. Also provides remote and process management.

System Detail Tab

The System Tab displays detailed information on the system's configuration, including BIOS, vendor information, operating system, location, machine name, function, memory and CPU utilization, etc. Administrators can choose to enter additional system information by filling in the fields at the top of the screen. The system's power management policies can be viewed and re-configured remotely by clicking on the Power Management button.

System Details : RUSSELL-PC (192.168.200.111)

System
Hardware
Network
Storage
Software

System Details

System Information

Machine Name:	RUSSELL-PC	Asset Number:	<input type="text"/>
User:	RUSSELL-PC\Administrator	Asset Date Installed:	<input type="text"/>
Domain/Workgroup:	test-lab.local	Asset Value:	<input type="text" value="0"/>
Manufacturer:	WIPRO	Owner:	<input type="text"/>
Machine Model:	D945GLF2	Location:	<input type="text"/>
Serial Number:	abc123	Function:	<input type="text"/>
Inventory Number:		Client Version:	V4.52.500-BL6653-3420-2364-Open (L)
Operating System:	Microsoft® Windows Vista™ Business		
OS Version:	32-bit		
OS Service Pack:	6.0.6002 Service Pack 2		

Board BIOS

Manufacturer:	Intel Corporation	Manufacturer:	Intel Corp.
Model:	D945GCLF2	Revision:	LF94510J.86A.0137.2008.1218.1815
Serial Number:	AZLS8330022E	Release Date:	December 18, 2008
Sensor Devices:	LPC47M997	SMBIOS Rev:	2.4

CPU

Processor Model:	Intel(R) Atom(TM) CPU 330 @ 1.60GHz	Clock Speed:	1596 Mhz
Manufacturer:	GenuineIntel	Number of Logical CPUs:	4
Total CPU Utilization:	16 %		

Memory

Type	Total	In Use	Available	Utilization
Physical Memory	2037 MB	969 MB	1068 MB	47.57 %
Virtual Memory	4317 MB	938 MB	3379 MB	21.73 %
Page File	2337 MB	67 MB	2270 MB	2.87 %

Memory Slots: 1

Maximum Supported Memory: 2048 MB

Location	Label	Data Width	Form	Size (MB)	Type	Speed (Mhz)
	J1MY CHAN A DIMM 0 (#1321127065)	64	DIMM	2048	DDR2 SDRAM	533

Slots

ID	Width	Status
PCI SLOT 1	32	Available

USB

Description
Intel(R) N10/CH7 Family USB Universal Host Controller - 27C8
Intel(R) N10/CH7 Family USB Universal Host Controller - 27C9
Intel(R) N10/CH7 Family USB Universal Host Controller - 27CA

Serial Ports

Name	Max Baud
Communications Port (COM1)	115200

Display Adapter

Description:	Intel(R) 82945G Express Chipset Controller 0 (Microsoft Corpora	Model:	Intel(R) 82945G Express Chipset Controller 0 (Microsoft Corpora
Driver:	7.14.10.1103	Memory:	256 MB
Monitor Name:	X233H	Monitor Serial Number:	LFMOC02301600DB24041

Figure 8: System Detail Tab

Monitoring Memory Errors

SyAM System Client provides real time monitoring and alerting of single- and multi-bit memory errors on systems with supported ECC Memory error monitoring.

The default alerting thresholds are to notify the administrator immediately on a multi-bit error or when two single-bit errors occur within a day.

Through the System Area Manager the administrator can adjust the thresholds and polling interval periods for both single- and multi-bit errors, and configure their notification methods.

Power Management Tab

(This feature is only available through the System Area Manager)

On the Power Management tab, the user can display and reconfigure power management policies for the managed system.

Power Management : SYAMAPPLIANCE3 (192.168.200.10)

Power Management System

Power Management Details

Power Plan Name

Timeout Settings

When computer is: **AC Main**

Turn off monitor:

Turn off hard disks:

System standby:

Hibernate:

Hybrid Sleep:

Scheduler Settings

Schedule	No Action	Shutdown	Restart	Hibernate	Execute Time
Sunday	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="text" value="00:00"/>
Monday	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="text" value="00:00"/>
Tuesday	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="text" value="00:00"/>
Wednesday	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="text" value="00:00"/>
Thursday	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="text" value="00:00"/>
Friday	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="text" value="00:00"/>
Saturday	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="text" value="00:00"/>

Defined applications to not shutdown if running

☐ smaagent.exe

Check for keyboard/mouse activity

Shutdown countdown timer

Wait period before rechecking

Number of attempts to shutdown

Enter application executable name:

System Security - User Log Off / Lock Screen Settings

If a defined application is running the screen may be locked or the user forced to log off.

Check for inactivity

☒ Force Logoff ☐ Lock Screen

System Uptime

1 hour, 14 minutes, 0 seconds

Figure 9: Power Management Tab

Power Plan Name

The Power Plan Name for a newly installed SyAM Windows System Client is the name of the active Windows Power Scheme. Setting up a new power plan in System Area Manager, or in SyAM Management Utilities, will create a new Windows Power Scheme and make it the active power plan.

Timeout Settings

From here you can configure the power scheme settings for the managed system. If the managed system is a notebook or tablet there will be two separate sets of settings: one

set that will be applied when connected to AC power, and the other set for when running on battery.

The options are;

- Turn off monitor

- Turn off hard disks

- System standby

- Hibernate – This will only be displayed if the system has hibernation enabled

Battery

This information is only displayed if the managed system is a notebook.

- Current Power Source – States if the system is plugged in using AC Power Cord or is running from the battery

- Battery Charging – States if the battery is in a charging state

- Battery Level – Current health state of the battery

- Battery Charge – The percentage of battery life available

Scheduler Settings

You can configure the managed system to be scheduled to perform a graceful system shutdown or restart at any time for each of the days.

To enable, click on the appropriate radio button for the action to be taken that day. (No Action / Shutdown / Restart). Then set the time using the drop down box.

Different actions can be set at different times for each of the days of the week.

Only one action per day can be scheduled.

Press the Apply Button to save the changes made.

Defined Applications not to shut down if running

You can enter the name of an application if found to be running it will not perform the scheduled shutdown.

To add an application, enter the name of the application executable and press the Add Application button.

To remove an application, click on the radio button next to the application you wish to remove and press the Remove Application button.

Check for Keyboard/Mouse Activity

This is the time period that is checked before attempting to perform a scheduled shutdown.

Shutdown Countdown Timer

This is the time period that the user is presented to cancel the scheduled shutdown.

Wait Period before Rechecking

This is the time period that the agent will wait before attempting to perform the scheduled shutdown.

Number of Attempts to Shutdown

This is the number of attempts the agent will attempt to perform the scheduled shutdown for that day.

System Security – User Log Off/Lock Screen Settings

This feature is used to secure a system against unauthorized access when the user is not present. Use the drop down menu to enable the feature and select the inactivity timeout period. Then choose either to force a logoff of the currently logged-in user, or lock the screen, requiring the user to re-enter a password.

Power Consumption

Information on system power consumption is displayed here for the prior day, week and month.

Number of Hours On – total number of hours system is powered on

Number of Hours Suspended – total hours in suspended power state

Number of Hours Powered Off – total number of hours system is powered off

% Powered Off By Client – percentage of system shutdowns performed by the System Client

% Powered Off By User – percentage of system shutdowns performed by the user

System Uptime

How long the system has been running, as reported by the operating system.

Hardware Detail Tab

All environmental sensors discovered on your platform are displayed in the Hardware Tab. This includes fans, temperatures, voltages, power redundancy loss and physical security. The number and type of sensors displayed is dependent upon the system platform and its configuration.

System Details : RUSSELL-PC (192.168.200.111)

System

Hardware

Network

Storage

Software

Hardware Details

Fans (RPM)

System Fan

1018 RPM

Normal

MCH FAN

5260 RPM

Normal

Temperature (°C)

Processor Temperature

45.0°C (113.0°F)

Normal

Internal Temperature

32.0°C (89.6°F)

Normal

Remote Temperature

37.0°C (98.6°F)

Normal

HDD Temp

29.0°C (84.2°F)

Normal

Voltages (v)

+2.5V

2.522 v

Normal

VCCP VOLTAGE

1.176 v

Normal

+3.3V

3.302 v

Normal

+5V

5.069 v

Normal

+12V

12.028 v

Normal

Figure 10: Hardware Detail Tab

Reset Chassis Intrusion

Some hardware platforms that support a chassis intrusion sensor, do not automatically reset the sensor state to normal when the chassis is closed. For such systems the Reset Chassis button causes the platform to reset the state of the sensor to normal.

Network Detail Tab

The Network Tab displays detailed information on adapters connecting the managed system to the network, including adapter and connection speed, connection status, IP address, and MAC address. Additionally the send and receive byte counts and calculated utilization over the last approximately 60 seconds is provided.

System Details : RUSSELL-PC (192.168.200.111)

System	Hardware	Network	Storage	Software
Network Details				
Network Adapter		Realtek PCIe GBE Family Controller #1		
Description		Realtek PCIe GBE Family Controller		
Connection Status		Operational		
DHCP		No		
IP Address		192.168.200.111		
Subnet Mask		255.255.255.0		
Default Gateway		192.168.200.1		
DNS		192.168.100.157		
MAC Address		00-1C-C0-70-70-F9		
Adapter Speed		100 Mbps		
Bytes Received		24014 b		
Bytes Sent		777 b		
Send Utilization		0 %		
Receive Utilization		0 %		

Figure 11: Network Detail Tab

Storage Detail Tab

The Storage Tab displays detailed information on physical and logical disks associated with the system being monitored. Physical disk attributes reported include vendor information, device ID, SCSI ID, and size. Logical disk attributes reported include name, size, space allocation, and utilization.

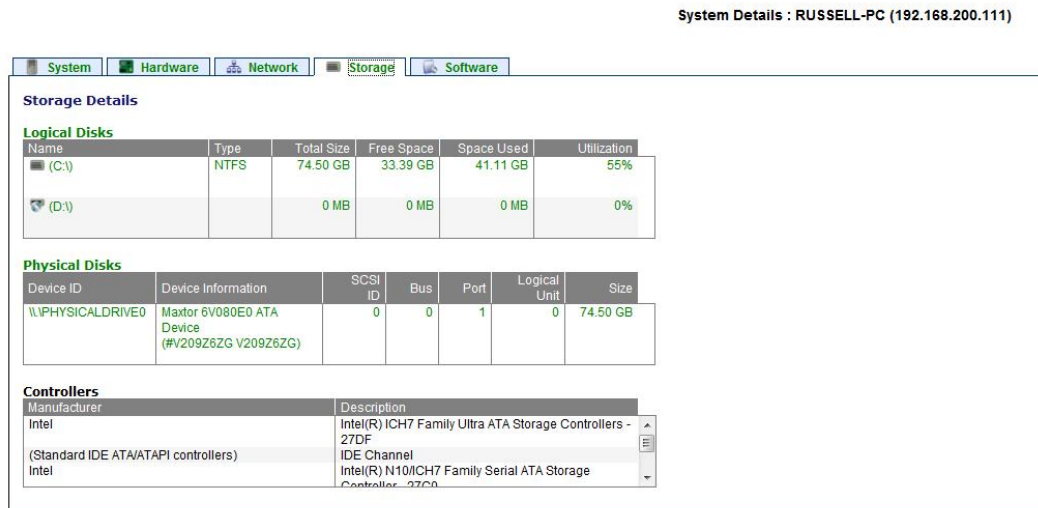


Figure 12: Storage Detail Tab

SMART Drive Pre-Failure Monitoring

Directly attached disk drives that are SMART capable are checked daily. Supported disk technologies include P-ATA, S-ATA, SCSI and FC. The administrator can be notified of bad disk drives before they fail and potentially lose data. Notification of a bad SMART status (Pending failure) is done via the notification options configured for the drive.

The Storage Details tab visually shows physical drive status. A physical drive in the warning state (amber colored) is pending failure and has reported a bad SMART status.

RAID Management

(This feature is only available through the System Area Manager)

Managed PCI RAID controllers can be configured with System Area Manager. Navigation begins from the Storage Details tab.

System Details : SUPERMICROX7DVL (192.168.100.116)

SystemHardwareNetworkStorageSoftware

Storage Details

Logical Disks

Name	Type	Total Size	Free Space	Space Used	Utilization
(A:)		0 MB	0 MB	0 MB	0%
(C:)	NTFS	141.42 GB	53.31 GB	88.11 GB	62%
(D:)		0 MB	0 MB	0 MB	0%

Physical Disks

Device ID	Device Information	SCSI ID	Bus	Port	Logical Unit	Size
\\.\PHYSICALDRIVE0	ST3250318AS ATA Device (#9VMMF9D2)	1	0	1	0	232.88 GB

Managed RAID Controllers

Controller	RAID Set	Status	RAID Level	Size	# Raid Drives
LSI MegaRAID SAS 9260CV-8i					

Controllers

Manufacturer	Description
Intel	Intel(R) 631xESB/6321ESB Ultra ATA Storage Controller - 269E
(Standard IDE ATA/ATAPI controllers)	IDE Channel
Intel	Intel(R) 631xESB/6321ESB/3100 Chipset Serial ATA Storage Controller

Figure 13: Storage Details – Managed RAID Controllers

Click on the RAID Controller to open up the RAID Controller window.

Please check the www.syamsoftware.com Web Site for RAID Controller Configuration Support.

Server System Client performs integrated monitoring of PCI RAID Controllers. All discovered PCI RAID Controllers that we support will be monitored, and their summary configuration and status displayed under "Managed RAID Controllers" within the Storage tab.

Server System Client will discover RAID Controllers that it can manage only if the required RAID drivers are installed. If a new RAID Controller is installed after Server System Client has been started, then restart the system for it to discover the new Managed RAID Controller.

Please check the release notes for the list of RAID Controller compatibility for the version of software you are using.

RAID Controller Details Screen

The RAID Controller screen is divided into 4 parts.

RAID Controller Details – Displays the controller model, firmware version, Cache if present, Number of Bus, ID, BIOS Version, BBU Presence and Max Devices per Buses

RAID Set Details – Displays the current RAID sets configured on this controller, including their description, RAID Set #, and Status (Normal, Init, Rebuild, Degraded, Failed). A RAID Set (also called a RAID Array) appears to the operating system as a physical disk.

Physical Drives – Displays the physical drives connected to the RAID controller, including their location on the BUS, ID, Status, Capacity, Vendor and Model. Physical drives in use by a RAID controller are typically not visible to the operating system.

Available Arrays – Displays the physical arrays defined by the RAID controller. A physical array is a grouping of drives on which RAID Sets are created. The display includes the RAID levels and capacities available for creating additional RAID sets.

RAID Controller Details : SUPERMICROX7DVL (192.168.100.116)

RAID Controller

Storage

RAID Controller Details

RAID Controller Model: LSI MegaRAID SAS 9260CV-8i

Controller ID: 0

Firmware version: 2.120.73-1289

BIOS version: 3.22.00_4.11.05.00_0x05030000

Controller Cache Memory: 512

BBU Presence: Normal

Number of Buses: 1

Max Device per bus: 8

Mute Alarm

Rescan

RAID Set Details

Delete RAID Set

Physical Drives

Channel 0

ID 12	Free	931.00 GB	ATA ST31000524AS	
ID 13	Free	931.00 GB	ATA ST31000524AS	
ID 14	Free	931.00 GB	ATA ST31000524AS	

Create Array

Add Global Spare

Remove Global Spare

Available Arrays

Create RAID Set

Delete Array

Figure 14: RAID Controller Details Screen

Steps in Creating a RAID Set

1. Decide if you will create a RAID Set on an existing Physical Array, or want to first create a new Physical Array for the RAID Set. If you will use an existing Physical Array proceed to step 4.
2. To create a Physical Array, choose the physical drives that you wish to make up the array by clicking on their check box. (Remember only drives not in use in other arrays or as hot spares can be used.)
3. Click on the Create Array button. Wait for the screen to update.

Physical Drives

Choose the physical drive(s) to create an Array or add as Spare.

Channel 0			
ID 12	Free	931.00 GB ATA ST31000524AS	<input checked="" type="checkbox"/>
ID 13	Free	931.00 GB ATA ST31000524AS	<input checked="" type="checkbox"/>
ID 14	Free	931.00 GB	<input checked="" type="checkbox"/>

Figure 15: Physical Drives – Choosing drives for the Array

4. Now click on the Physical Array that you wish to create the RAID Set on. (Physical Arrays with no available capacity will not display any available RAID Set configurations.)
5. Choose the RAID level from the drop down box. Only RAID levels supported for the particular set of drives in the Physical Array will be presented. The maximum capacity available for the selected RAID level is calculated and displayed. You may enter a lower capacity to be used for this RAID Set.

Physical Drives

Choose the physical drive(s) to create an Array or add as Spare.

Channel 0			
ID 12	Free - Array # 0	931.00 GB ATA ST31000524AS	
ID 13	Free - Array # 0	931.00 GB ATA ST31000524AS	
ID 14	Free - Array # 0	931.00 GB	

Available Arrays

Array #	# Drives in Array	Free Space (MB)	RAID Level	Capacity (MB)	Caching	Stripe Size
0	3	2860032	<div>RAID-0</div> <div>RAID-0</div> <div>RAID-5</div>	2860032	Disabled	1024 KE

Figure 16: Available Array - Configuring the RAID Set

6. Next choose the Caching policy and stripe size from the drop down boxes.

7. Click the Create RAID Set button to create the RAID Set.
8. The system will now process your configuration and will create the RAID Set. If for any reason the create operation fails, a message will be displayed at the top of the screen explaining the cause for failure.
9. The new RAID Set will now appear under the RAID Set Details
10. If you created a Physical Array in Step 3 and decided not to create a RAID Set on it, you may dismiss it by selecting it and clicking the Delete Array button. You cannot delete Physical Arrays that have RAID Sets created on them.

The screenshot shows the RAID Controller Storage interface. At the top, there are tabs for 'RAID Controller' and 'Storage'. Below the tabs, the 'RAID Controller Details' section displays the following information:

- RAID Controller Model:** LSI MegaRAID SAS 9260CV-8i
- Firmware version:** 2.120.73-1289
- Controller Cache Memory:** 512
- Number of Buses:** 1
- Controller ID:** 0
- BIOS version:** 3.22.00_4.11.05.00_0x05030000
- BBU Presence:** Normal
- Max Device per bus:** 8

Below the details, there are two buttons: 'Mute Alarm' and 'Rescan'.

The 'RAID Set Details' section contains a table with the following data:

RAID Set #	Status	RAID Level	Capacity (MB)	# Drives in RAID set	Caching	Stripe Size	Array #
0	Normal	RAID-5	1,862.00 GB	3	Disabled	1024 KB	0

At the bottom of the RAID Set Details section, there is a 'Delete RAID Set' button.

Figure 17: RAID Set Details – Information on Configured RAID Set

Adding/Removing a Global Spare

1. Choose the physical drive that you wish to become a global spare to the RAID Set by clicking on its check box, then click on the Add Global Spare button.
2. To remove a global spare click on the check box next to the drive that is currently displayed as a hot spare, then click the Remove Global Spare button.

Physical Drives

Choose the physical drive(s) to create an Array or add as Spare.

The screenshot shows the 'Physical Drives' selection window. It displays a list of drives under 'Channel 0':

- ID 14: 931.00 GB, ATA ST31000524AS, Full - Array # 0
- ID 15: 931.00 GB, ATA ST31000333AS, Hot Spare

Each drive has a check box next to it. The check box for ID 15 is checked. At the bottom of the window, there are three buttons: 'Create Array', 'Add Global Spare', and 'Remove Global Spare'.

Figure 18: Removing a Hot Spare drive

Deleting a RAID Set

Under RAID Set Details click the radio button next to the RAID Set to delete, then click the Delete RAID Set button. Note that when multiple RAID Sets are present on the same Physical Array, only the last RAID Set displays a radio button and may be selected to delete.

RAID Controller

Storage

RAID Controller Details

RAID Controller Model:LSI MegaRAID SAS 9260CV-8i
Firmware version:2.120.73-1289
Controller Cache Memory:512
Number of Buses:1

Controller ID:0
BIOS version:3.22.00_4.11.05.00_0x05030000
BBU Presence:Normal
Max Device per bus:8

Mute Alarm

Rescan

RAID Set Details

RAID Set #	Status	RAID Level	Capacity (MB)	# Drives in RAID set	Caching	Stripe Size	Array #
<input checked="" type="radio"/> 0	Normal	RAID-5	1,862.00 GB	3	Disabled	1024 KB	0

Delete RAID Set

Figure 19: RAID Set Details – Deleting a RAID set

Software Details Tab

The Software tab displays detailed information on the processes, services, applications and drivers installed and running on the system being monitored.

Installed Applications and Drivers

Installed applications are listed with name, vendor and version information. The list of drivers includes name, category, version and provider.

System Details : B1-P4\$BA-XP (192.168.100.152)

System Hardware Network Storage Software

Software Details

▼ Installed Applications / Drivers

Installed Applications (70)

Name	Vendor	Version
Adobe Photoshop CS3	Adobe Systems Incorporated	10.0
C-Media 3D Audio		
Microsoft Office Enterprise 2007	Microsoft Corporation	12.0.4518.1014
Windows Internet Explorer 8	Microsoft Corporation	20090308.140743
InterActual Player		
Security Update for Windows XP (KB2393802)	Microsoft Corporation	1

Drivers (70)

Name	Category	Version	Provider
Microsoft ACPI-Compliant System	System devices	5.1.2535.0	Microsoft
Primary IDE Channel	IDE ATA/ATAPI controllers	5.1.2600.0	Microsoft
Secondary IDE Channel	IDE ATA/ATAPI controllers	5.1.2600.0	Microsoft
Audio Codecs	Sound, video and game controllers	5.1.2535.0	Microsoft
Legacy Audio Drivers	Sound, video and game controllers	5.1.2535.0	Microsoft

► Services / Processes

► Windows Event Logs

Figure 20: Installed Applications and Drivers

Processes and Services

The list of running processes includes the process name, process ID, and CPU and memory utilization. The list of services includes description, startup type, and current state.

System Hardware Network Storage Software

Software Details

Installed Applications / Drivers

Services / Processes

Processes (50)

Image Name	ID	CPU	Memory (K)
<input type="radio"/> System Idle Process	0	94	24
<input type="radio"/> System	4	0	1316
<input type="radio"/> smss.exe	412	0	552
<input type="radio"/> csrss.exe	480	0	5028

End Process Create New Alert

Services (138)

Description	Startup Type	Status
<input type="radio"/> Adobe Acrobat Update Service	Auto	Running
<input type="radio"/> Adobe Flash Player Update Service	Manual	Stopped
<input type="radio"/> Application Experience	Auto	Running
<input type="radio"/> Application Layer Gateway Service	Manual	Stopped

Start Stop Create New Alert

Windows Event Logs

Figure 21: Processes and Services

End Process – Start/Stop Service

(This feature is only available through the System Area Manager)

System Area Manager can stop a running process, and start or stop a service, on a managed system remotely through the browser interface.

To end a process, select the process by clicking the radio button to the left of the Image Name, then click the End Process button.

Processes (50)

Image Name	ID	CPU	Memory (K)
<input type="radio"/> powerui.exe	3300	0	6172
<input type="radio"/> WmiPrvSE.exe	3548	3	8800
<input checked="" type="radio"/> thunderbird.exe	3924	0	55268
<input type="radio"/> svchost.exe	3960	0	21868
<input type="radio"/> WMI	3300	0	122600

End Process Create New Alert

Figure 22: End the Process

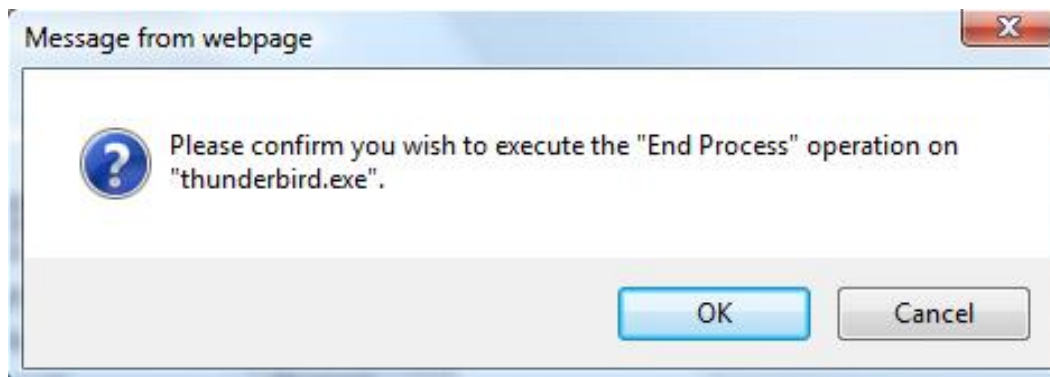


Figure 23: Confirm to End the Process

To start a service, select the service by clicking the radio button to the left of the Description (service name), then click the Start button. The service status must be Stopped in order to be started.



Figure 24: Starting a Service

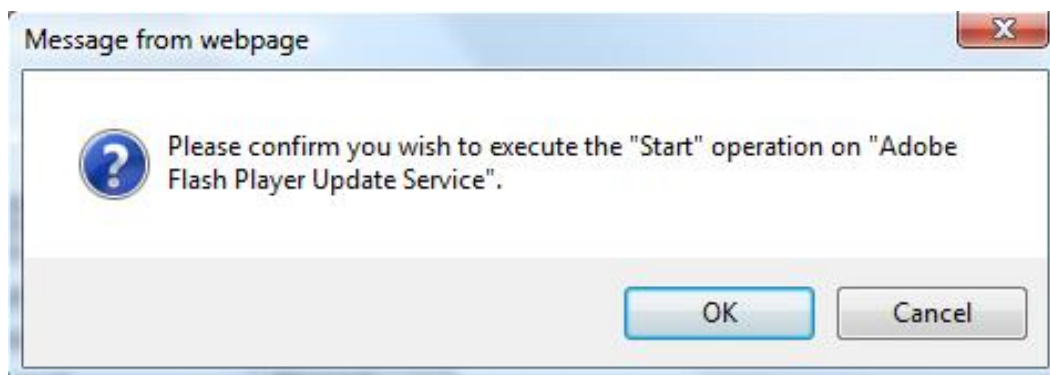


Figure 25: Confirm to Start the Service

To stop a service, select the service by clicking the radio button to the left of the Description (service name), then click the Stop button. The service status must be Running in order to be stopped.



Figure 26: Stopping a Service

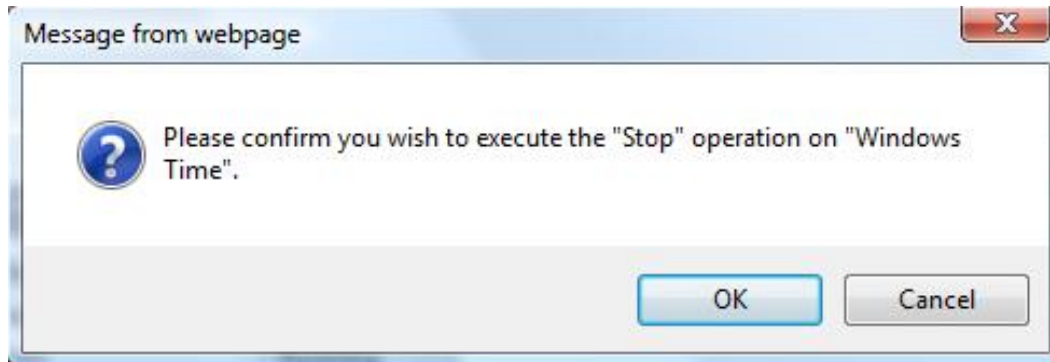
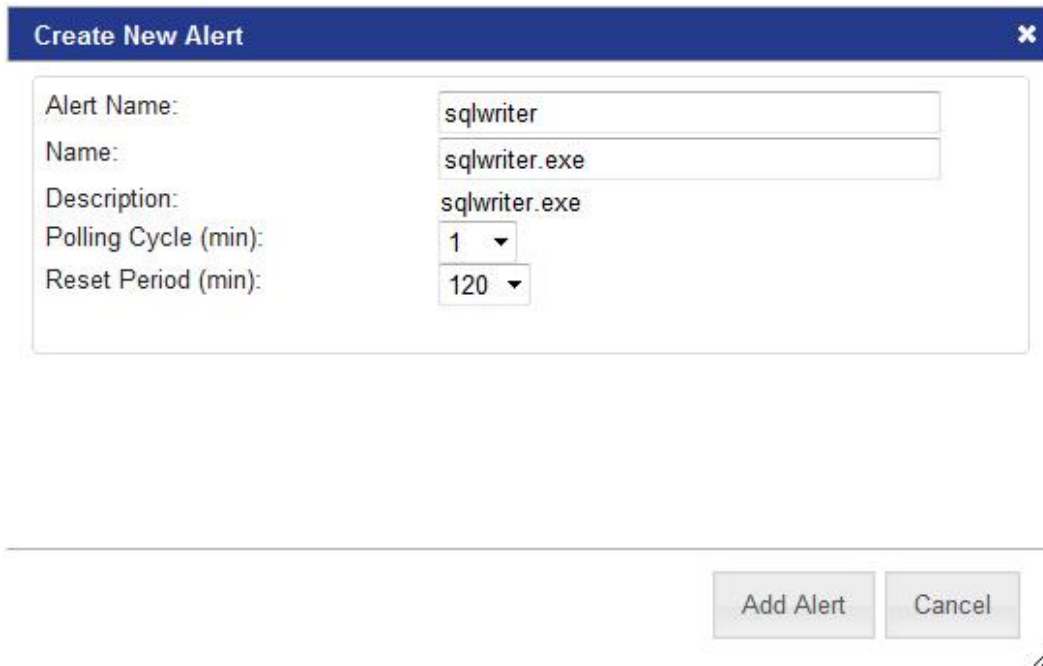


Figure 27: Confirm to Stop the Service

Process and Service Alerting

(This feature is only available through the System Area Manager)

To create an alert on the status of a process, select the process by clicking the radio button to the left of its name, then click Create New Alert.



The image shows a 'Create New Alert' dialog box with a blue title bar and a close button (X) in the top right corner. The dialog contains a form with the following fields:

Alert Name:	sqlwriter
Name:	sqlwriter.exe
Description:	sqlwriter.exe
Polling Cycle (min):	1 ▼
Reset Period (min):	120 ▼

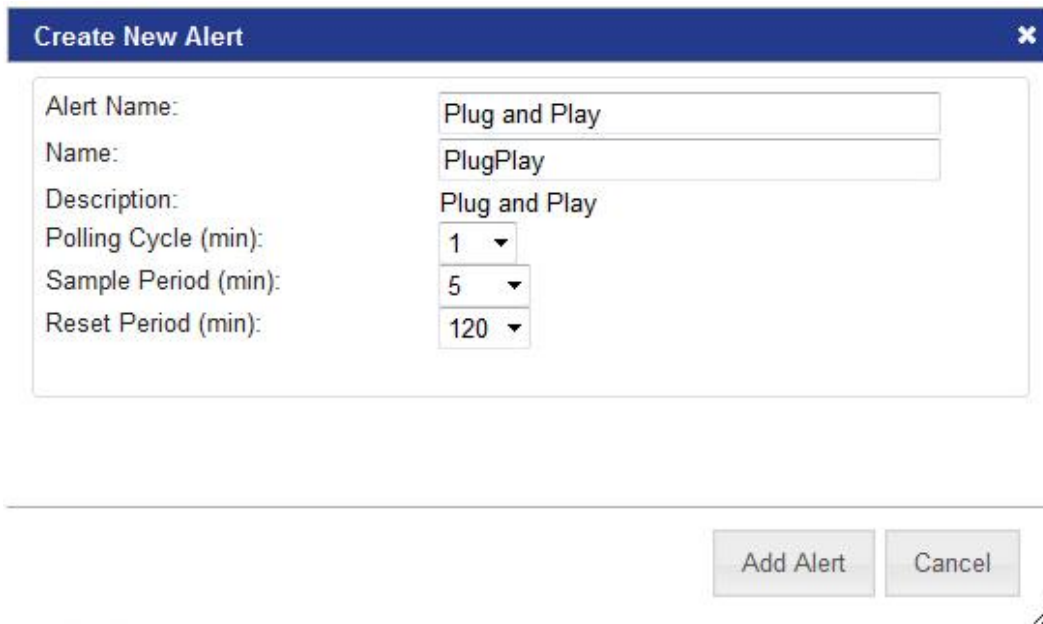
Below the form, there are two buttons: 'Add Alert' and 'Cancel'. A horizontal line is positioned above these buttons. In the bottom right corner of the dialog, there is a double-slash icon (//).

Figure 28: Create Process Alert

Enter an Alert Name. The alert will be listed by this name in the Software area and in the System Alert Matrix. The Polling Cycle controls how often the System Client will poll for process status. After an alert is generated, System Area Manager waits for the length of the Reset Period before sending another alert.

A system service alert will attempt to restart the service if it is not running. If the service is found to be not running for a second time during the Reset Period, an alert will be generated.

System service alerts are created in the same way as process alerts. Click the radio button to the left of the service name, then click Create New Alert.



Create New Alert [X]

Alert Name: Plug and Play

Name: PlugPlay

Description: Plug and Play

Polling Cycle (min): 1 ▾

Sample Period (min): 5 ▾

Reset Period (min): 120 ▾

[Add Alert] [Cancel]

Figure 29: Create Service Alert

Retrieving Windows Events

System Client can retrieve events from Windows event logs.

To retrieve events from the Application, System or Security event logs, first choose the event type to filter by. For Application and System logs, available event types are Error, Warning, and Information; for the Security event log, the options are Failure Audit and Success Audit. Next, choose the maximum number of events to be returned, up to 100. Click the Retrieve Events button.

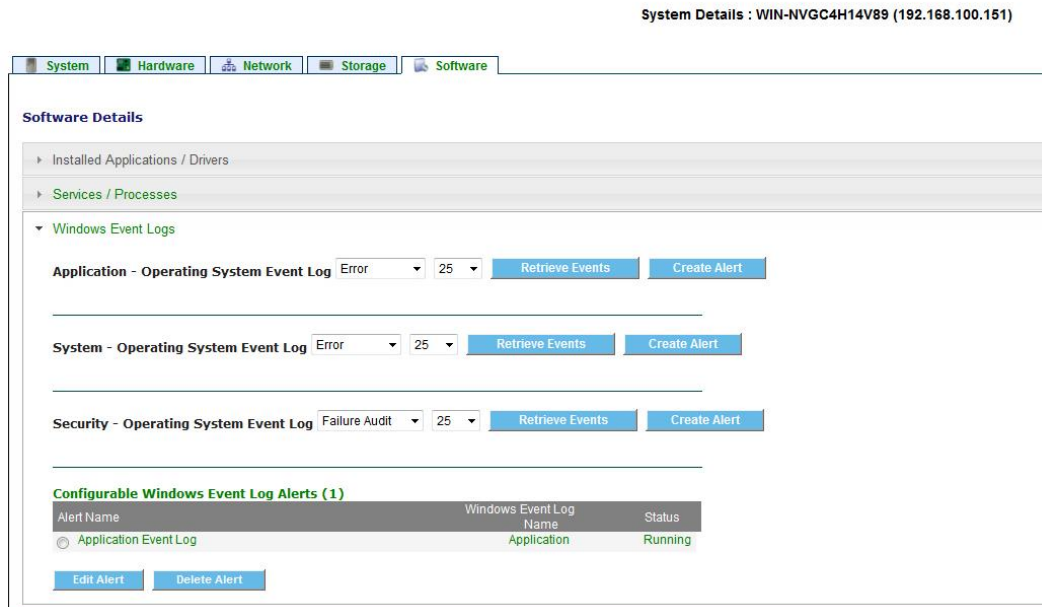


Figure 30: Retrieving Windows Events

Windows Event Log Alerting

(This feature is only available through the System Area Manager)

System Area Manager can generate alerts when log files are cleared on reaching their size limits.

To create an event log alert, click the Create Alert button for the Application, System, or Security log.

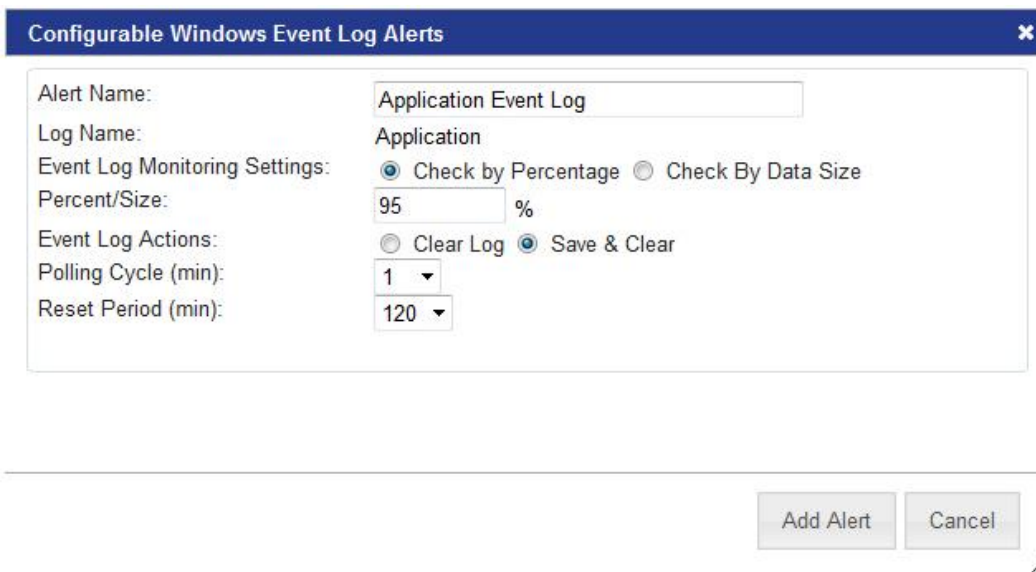


Figure 31: Creating an Event Log Alert

Enter a percentage of the maximum log file size determined by the operating system, or a size in megabytes. If the Save & Clear option is selected, the log file will be backed up in the same folder as other event files before the log is cleared. Older backup files will be overwritten.

Once they have been created, configurable event log alerts will be listed in the interface, where they can be edited or deleted.

System Details : WIN-NVGC4H14V89 (192.168.100.151)

System
Hardware
Network
Storage
Software

Software Details

Installed Applications / Drivers

Services / Processes

Processes (48)

Image Name	ID	CPU	Memory (K)
System Idle Process	0	93	24
System	4	0	300
smss.exe	228	0	1072
csrss.exe	312	0	4512

End Process
Create New Alert

Configurable Process Alerts (1)

Alert Name	Process Name	Status
sqlwriter	sqlwriter.exe	Running

Edit Alert
Delete Alert

Services (144)

Description	Startup Type	Status
Adobe Acrobat Update Service	Auto	Running
Adobe Flash Player Update Service	Manual	Stopped
Application Experience	Manual	Stopped
Application Layer Gateway Service	Manual	Stopped

Start
Stop
Create New Alert

Configurable Service Alerts (1)

Alert Name	Service Name	Status
Plug and Play	PlugPlay	Running

Edit Alert
Delete Alert

Windows Event Logs

Figure 32: Configurable Windows Event Log Alerts

Chapter 4: Configuring System Alerts

System Client software provides the ability to send alerts via email. System Area Manager provides a much richer set of alerting features. A whole new hierarchy of centralized alerting is available. And additional alerting features within each managed system are unlocked by using System Area Manager. Users may configure thresholds, and sample/reset periods for each monitored resource. Several new notification methods become available, such as via SNMP Traps or Operating System Event Logs.

System Alert Matrix

The System Alert Matrix provides a detailed, color-coded view of the status of all monitored components in the managed system.

Settings such as notification methods, thresholds, sample periods, etc for each sensor type category are automatically applied to all discovered sensor instances of that type.

Alerts : System Client : WIN8AUTO (192.168.100.156)

System Alert Matrix

Physical Sensors
Lower Threshold
Upper Threshold
Description
Critical
Warning
Current
Warning
Critical

Physical Security
Fans (RPM)
Temperature (°C)
Voltages (v)
Restore Physical Sensor Thresholds

Logical Sensors
Description
Current
Threshold

Network Adapters
Physical Disks
Logical Disks
CPU Utilization (%)
Memory Utilization (%)
Hardware Change
Software Change
Windows Event Log Monitor

Notification Settings
Email Address
SMS/Pager Address
System Area Manager
Username
Sender's Email Address
Sender's Email Password
Mail Server
SNMP Trap Receiver

admin@syamsoftware.com
192.168.100.151
itadmin
admin@syamsoftware.com








mail.syamsoftware.com
192.168.200.111

Example
admin@company.com
192.168.1.1
Username
Local.Admin@company.com
smtp.company.com
snmp.company.com













Figure 33: System Alert Matrix

Monitored Sensor Types

Physical Sensors

	Security – If/when the system chassis is opened, the intrusion will trigger a sensor alert, provided that the connected board/BIOS support this information reporting.
	Fans – Monitored for rotational speed provided the fan is connected to a board/BIOS that supports the information reporting.
	Voltages – Monitored for the functionality that the connected board/BIOS supports.
	Temperature – Monitored for the functionality that the connected board/BIOS supports.
	Thermal Controlled Fans – Monitored for rotational speed, alerts when the CPU Temperature exceeds the defined threshold and the fan is not spinning. Provided for a defined set of motherboards supporting this feature.
	Wattage Utilization – Monitored for power consumption, provided that system hardware supports this information reporting.
	Redundant Power Loss – Monitors IPMI managed servers and alerts upon when redundant power systems lose their redundancy

Logical Sensors

	Network Adapters – Monitors Ethernet operational state.
 	Physical Disk – Monitors the presence and percent usage of a physical disk in the system and/or a RAID Set available to the operating system through a RAID controller. Logical Disks – The percent of capacity used by the logical disk formatted and mounted by the operating system is reported. If the disk has not been formatted, it will be reported as a failed disk.
	Removable Device – Removable devices that are represented to the operating system will be reported as mounted as long as they are present in the system.
 	Managed RAID Controller – RAID Controller health. Total CPU utilization – Percentage of CPU usage.
 	Total Memory utilization – Percentage of Physical and Virtual Memory usage. Memory Error Rate – Number of single-bit and multi-bit errors that have occurred (requires ECC memory and support by the server board)
 	Hardware Change – Monitors changes to system hardware configuration. Software Change – Monitors changes to installed programs.
 	Service Monitor – Monitors state of a system service. Process Monitor – Monitors state of a process.
	Windows Event Log Monitor – Monitors file size of a Windows event log.

Notification Settings – Configuring email alerting

Notification Settings		Example
Email Address	<input type="text" value="admin@company.com"/>	admin@company.com
SMS/Pager Address	<input type="text" value="itemergency@company.com"/>	
System Area Manager	<input type="text" value="192.168.100.158"/>	192.168.1.1
Username	<input type="text" value="itadmin"/>	Username
Sender's Email Address	<input type="text" value="itadmin@company.com"/>	Local.Admin@company.com
Sender's Email Password	<input type="password" value="*****"/>	
Mail Server	<input type="text" value="mail.company.com"/>	smtp.company.com
SNMP Trap Receiver	<input type="text" value="192.168.200.111"/>	snmp.company.com
<input type="button" value="Reset Form"/> <input type="button" value="Test Notifications"/> <input type="button" value="Apply"/>		

Figure 34: Entering Notification Information

Physical Sensor Upper and Lower Thresholds

Each physical sensor instance has its own range of safe operating values with lower and upper warning and critical thresholds. These values are discovered if the hardware platform supports that information, or are calculated from available data.

Physical Sensor Warning and Critical Alerts

Since physical sensors may enter warning or critical health states, separate alerting methods may be configured for each.

Logical Sensor Thresholds

Monitored resources that are not physical sensors are called "Logical Sensors". Each instance of the logical sensor types Logical Disk, CPU Utilization, and Memory Utilization, has a utilization threshold.

Logical Sensor Warning Alerts

Logical sensors, by design, may enter the warning health state but not critical. So there is only a single set of alerting methods available.

Sample Period

CPU and Memory Utilization are gathered several times over a period of time, so that transient spikes are not reported. This time period is configurable by the administrator, and is known as the sample period. The pre-set sample period options are from 4-8 minutes. If 80% of the gathered readings exceed the threshold, a transition to warning state occurs.

The sample period for an instance of Logical Disk that is a removable device (floppy or CD-ROM drive) is similar to that of other sensors. A set of four readings is gathered during the sample period. If the device (floppy disk or CD) is present through all of them, a transition to warning state occurs.

Reset Period

When a logical sensor transitions to a warning health state, an event is raised and alerts are sent according to the Warning Alerts settings. The reset period is the amount of time during which no additional alerts will be issued after the initial alert.

Removing a Sensor Instance From the System Alert Matrix

When a sensor instance, such as a specific logical or physical disk, has been removed from the system, or has otherwise entered a critical state, it is displayed in red and an "X" appears next to it. Click on the "X" to permanently delete this sensor instance from the alert matrix. Only do this if the instance is not being replaced. Once the sensor has been replaced it will automatically be monitored and the new health state will be represented.

Enter the destination email address, the sender's email address, and the mail server hostname or IP address. Enter the user name and password if outgoing email is authenticated. Click the Apply button to save changes. Use the Test Notification button to send a test email, and ensure your configuration is correct.

SyAM Alerting Enhancements

(These features are only available through the System Area Manager)

When a system is managed from the System Area Manager, it enables users to modify any of the thresholds, sample periods, reset periods, and notification methods. It also enables alerts to be sent via the other notification methods such as SMS/pager, Local Alerts, sending events to the System Manager (for it to perform central alerting methods), SNMP Trap, or writing the event to the System Event Log.

Local Alerting

Enabling Local Alerts in the System Alert Matrix causes a tray icon to be displayed, and popup windows to appear, on the managed system when an alert is generated.

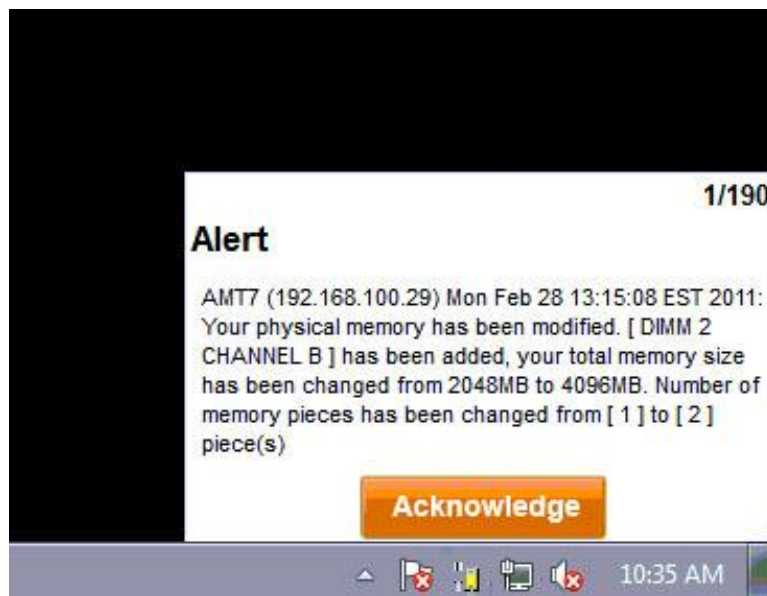


Figure 35: Local Alert popup

Alerts are categorized as asset monitoring events, hardware events, storage events, network events, and performance utilization events.

The user is prompted to acknowledge each alert. When the administrator generates a Local Alert report, each alert shows whether it has been acknowledged, and by which user.

Integration into Enterprise Frameworks

System Area Management (SyAM) MIB

The SyAM MIB must be installed into the Enterprise Framework server before it can decipher traps sent from a managed system.

Please consult your Enterprise Framework application on how to install a 3rd party MIB.

The MIB file can be downloaded from the SyAM website.

System Area Management (SyAM) Integration into Microsoft System Center Operations Manager 2007/2012 (SCOM)

The SyAM Management Pack for Microsoft System Center Operations Manager must be imported into the SCOM server, before it can decipher Windows events written by SyAM Management Agents. Please consult the SyAM Software Tool Tip “Using the SyAM Events Management Pack” for instructions on installation and configuration.

The SCOM 2007/2012 Management Pack file can be downloaded from the SyAM website.

Chapter 5: Contact Details & Glossary

This chapter contains technical support contact information as well as a glossary.

Contact Details

Contact	product-support@syamsoftware.com
Web	www.syamsoftware.com
Support Information	http://www.syamsoftware.com/
Product Information	http://www.syamsoftware.com/

Glossary

Adding a sensor to the alert matrix

Sensors are automatically monitored, they have their sensor category default notifications applied to them.

Critical Level

The level of the threshold which is operating beyond the normal and warning thresholds.

Current Value

The actual reported sensor reading for the system component on a timed reporting cycle.

From Address

Administrators can define a unique name for the SyAM alerting email address.

Hardware Detail Screen

Information on the system components being monitored, including fans, temperature, voltages, etc.

Hardware Event

When a threshold is met or exceeded by a physical component of the system.

Header Bar

The header bar within this browser contains the <Logout> <Refresh> <?> function buttons

Health colors

Green = Fully Functional
Amber = Warning threshold exceeded
Red = Critical Threshold exceeded
Grey = System update pending
Blue = Agent has been manually stopped
Purple = System is no longer responding
Black = System has been shut down
Brown = Suspended Power State

Intervals

Readings on all monitored systems and components are at preset cycles of 60 seconds.

Logical Sensor

Storage, network adapters, removable disk drives, and CPU and memory usage.

Login

Administrators must login using a user name and password that has administrative rights to the machine that is running SyAM software

Lower threshold

The lowest threshold to be alerted upon if it is exceeded.

Network Detail Screen

Information on network adapters and their configuration.

Network Event

Network connectivity is lost.

Notification Settings

Email, SMS/pager, SyAM System Area Manager, Network Messages and SNMP Traps.

Performance utilization event

CPU or memory utilization threshold is met or exceeded.

Physical Sensors

Physical Security, Fans, Temperature, Voltages and Power Unit sensor monitored

Reset period

The frequency of notifications sent after the initial alert has been sent and if the sensor has not been corrected.

Restore Physical Sensor Thresholds

This will reset to the original sensor threshold values when you click on this button.

Sample period

Time that is used to take CPU and Memory utilization samples.

Sensor Status Change back to normal

When a sensor returns back to within its operating threshold range.

SyAM Agent

Non-intrusive monitoring agent configured and managed by the System Area Manager

System Area Manager

Provides monitoring and communications with all managed agents

System Client

Non-intrusive monitoring agent that can be browsed to directly or managed and configured from the System Area Manager

System Client Tree

Browsing directly to a system running System Client.

SMTP address

Mail system address: example: mail.company.com or 192.168.1.100

SNMP Traps

Notification from a system or central manager to an enterprise framework server –
Requires System Area Management (SyAM) MIB to be installed on enterprise framework server.

Software Detail Screen

Information on the processes, services, and applications installed.

Storage Detail Screen

Information on physical and logical disks, controllers and removable devices.

Storage Event

Logical disk has reached its utilization threshold, Loss of logical disk, or Loss of Physical disk.

System Alert Matrix

Interface to configure sensor thresholds and notification options.

System Alert Notification Settings

Notification and configuration details for the System Alert matrix.

System Detail Screen

Information on the system's configuration, BIOS, operating system, location, memory, CPU, etc.

Upper Threshold

The highest threshold to be alerted upon if exceeded.

User name and Password for outgoing Authentication

Enter the administrator user name and password (if the outgoing email system requires authentication)

Warning Level

The level of the threshold that is operating between the normal and critical thresholds.

Welcome

Displays the Revision and contact details for the product.

Chapter 6: System Area Manager Software

This chapter contains information on the enhancements available with a System Area Manager.

Differences between System Client and SyAM System Area Manager

The following table lists the features available when managing systems from a System Area Manager vs managing systems locally (with System Client – Server/Desktop/Notebook).

Feature	System Client	System Area Manager
System Level Alerting <ul style="list-style-type: none"> Email SMS/Pager SyAM Central Event Log SNMP (Enterprise Managers) System Event Log (MOM) Thresholds Sample Periods Reset Periods 	<ul style="list-style-type: none"> ■ 	<ul style="list-style-type: none"> ■ ■ ■ ■ ■ ■ ■
Centralized Alerting <ul style="list-style-type: none"> Email SMS/Pager SNMP 		<ul style="list-style-type: none"> ■ ■ ■
Centralized Monitoring <ul style="list-style-type: none"> System Absence Platform Event Traps (PETs) Asset Changes 		<ul style="list-style-type: none"> ■ ■ ■
Remote Management <ul style="list-style-type: none"> Graceful Shutdown/Restart Remote Console (KVM) IPMI Over LAN (Power on/off) IPMI Over LAN (Event Log) AMT Remote Power functions AMT Remote Control AMT System Defense AMT KVM 		<ul style="list-style-type: none"> ■ ■ ■ ■ ■ ■ ■ ■
Storage Management <ul style="list-style-type: none"> Logical Utilization Monitoring Removable Device Monitoring RAID Monitoring RAID Configuration / Management 	<ul style="list-style-type: none"> ■ ■ ■ 	<ul style="list-style-type: none"> ■ ■ ■ ■
Software Management <ul style="list-style-type: none"> End Process Start/Stop Service 		<ul style="list-style-type: none"> ■ ■
Power Management <ul style="list-style-type: none"> Power Policy Configuration Power shutdown/Restart Scheduler 		<ul style="list-style-type: none"> ■ ■
Event Logging <ul style="list-style-type: none"> Monitored event logging Performance Snapshot Event Filtering / Sorting Output to file 		<ul style="list-style-type: none"> ■ ■ ■ ■

<i>Feature</i>	<i>System Client</i>	<i>System Area Manager</i>
<i>Asset / Inventory Reporting</i> <ul style="list-style-type: none"> <i>Summary</i> <i>Detailed</i> <i>CSV / HTML / XML output</i> 		<div>■</div> <div>■</div> <div>■</div>